Abstract

We are proposing to measure near-threshold π^0 photo-production using linearly polarized photons. Under the reasonable assumptions a) that close to threshold only s- and p-waves contribute and b) that the phases of the p-wave amplitudes are negligible we will be able to determine uniquely the amplitudes contributing to this fundamental process. We will also be able to determine the near-threshold energy dependence of the multipoles and the s-wave πN scattering length. In addition to providing precise data (previously unattainable) on a fundamental process, these measurements will permit a rigorous test of the predictions of Chiral dynamics. This experiment will be the first experiment to utilize a Compton polarized photon source in Hall B.